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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/773,401	02/09/2004	Julia Exir		6603

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EXAMINER

TRAN, BINH X

ART UNIT

PAPER NUMBER

1765

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/773,401	Applicant(s) EXIR, JULIA	
	Examiner Binh X. Tran	Art Unit 1765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 May 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The amendment filed 4-7-2006 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows:

In paragraph 0018 and paragraph 0032, the applicants introduce new matter "silicon wafer, quartz, or mica" into the specification.

In paragraph 0019, the applicants introduce new matter "titanium (iv) butoxide, titanium (iv) tert-butoxide, titanium (iv) methoxide, or titanium (iv) propoxide" into the specification

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Objections

2. Claim 10 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 10 depends on claim 9. In line 3 of claim 9, applicants already recite that the colloid crystal template comprising organic polymer particles. Therefore, the limitation "wherein the colloidal crystal template is comprised of organic polymer particles" in claim 10 fails to further limit the subject matter of a previous claim 9.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 9-29 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In line 4 of claim 9, line 1-2 of claim 16 and line 1-3 of claim 24, the examiner considers the limitation "noncolloidal inorganic precursor" (emphasis added) as a negative limitation. Any negative limitation or exclusionary proviso must have basis in the original disclosure. According to the MPEP 2173.05(i), "The mere absence of a positive recitation is not basis for an exclusion. Any claim containing a negative limitation which does not have basis in the original disclosure should be rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement."

In line 2 of the new claim 12, the examiner cannot find the support for the limitation "polymethylmethacrylate or fluorinated polymer" in the original specification.

In line 2 of claim 20, the examiner cannot find the support for the limitation "titanium (iv) butoxide, titanium (iv) ter-butoxide, titanium (iv) methoxide, or titanium (iv) propoxide" in the original specification.

In line 2 of claim 27, the examiner cannot find the support for the limitation "silicon wafer, quartz or mica" in the original specification.

Claims 10-29 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement because they directly or indirectly depend on claim 9.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 9-29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In line 4 of claim 9, the term "the interstitial voids" lacks antecedent basis.

Claim 21 recites the limitation "the alkoxide" in claim 9. There is insufficient antecedent basis for this limitation in the claim.

In line 2 of claim 21, the term "the interstitial voids" lacks antecedent basis.

In line 2 of claim 28, the phrase "high quality three-dimensional periodicity" (emphasis added) is subjective and indefinite. It is unclear from the claim, what specific property or condition that applicants consider as "high quality".

Claims 10-29 are indefinite because they directly or indirectly depend on indefinite claim 9.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 9-13, 15-22, 24, 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Holland et al. (Synthesis of Macroporous Minerals with Highly Ordered Three-Dimensional Arrays of Spheroidal Voids) in view of Norris et al. (US 6,139,626).

Respect to claim 9, Holland discloses a method for forming inorganic macroporous material comprising the steps of:

providing a colloidal template comprising organic polymer particles (i.e. latex sphere);

introducing into the void of the template a noncolloidal inorganic composition (i.e. metal alkoxide solvent) (page 539);

forming a harden composite organic-inorganic composition (page 539);

removing the template from the harden composite organic-inorganic structure to form an inorganic macroporous material (i.e. calcinations, page 539).

Holland fails to disclose the template is a colloidal crystal template on a substrate. However, Holland clearly teaches to use colloidal template. Norris teaches to use a colloidal crystal template on a glass or semiconductors or ceramic substrate (col. 5 lines 54-67; col. 6 lines 3-47). It would have been obvious to one of ordinary skill in the art at the time of the invention was made, to modify Holland in view of Norris by using a colloidal crystal template on a substrate because this structure will allow us to disperse the nanocrystals and easy to remove the template from the structure..

Respect to claims 10-12, Holland discloses the template comprises of organic polymer particles (i.e. latex sphere) including polystyrene sphere (abstract).

Respect to claims 13, 15, Holland fails to disclose the organic particles comprise surfactant on the surface to fuses the particles together. Norris teaches to use organic particles comprise surfactant on the surface in order to bind the particles together (col. 6 lines 30-45). It would have been obvious to one of ordinary skill in the art at the time of the invention was made, to modify Holland in view of Norris by using surfactant because it helps the molecule electronically passivates the particles by binding to the surface (col. 6 lines 33-35).

Respect to claims 16-20, Holland discloses the noncolloidal inorganic precursor composition comprises an inorganic precursor dissolved in solvent, wherein the solvent is ethanol and the precursor is titanium alkoxide (pages 539, 2nd column). Respect to claim 21, Holland disclose the harden composite organic-inorganic structure comprises allowing the metal alkoxide in the voids of the colloidal crystal template (i.e. latex sphere) to condense (page 539). Respect to claim 22, Holland teaches to calcine the organic polymer particles (page 539 col. 2). Respect to claim 24, Holland discloses the step of introducing the noncolloidal inorganic precursor (i.e. metal alkoxide) into the voids of the colloidal crystal template (i.e. latex sphere or polystyrene sphere) comprises subjecting the noncolloidal inorganic precursor and the colloidal crystal template to a gravitational force (See "Scheme 1" Figure in page 539). Respect to claim 26, Holland discloses the macroporous material have applications in photocatalysis (page 538, read on photonic stopgap). Respect to claim 27, Norris

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teaches the substrate comprises glass or semiconductors substrate (page 6 lines 10-16). Respect to claim 28, Holland discloses the macroporous material comprises a high degree periodic three-dimensional array (page 538).

9. Claim 23 is rejected under 35 U.S.C 103(a) as being unpatentable over Holland et al. in view of Norris as applied to claim 9 above and further in view of Oki et al. (US 6,399,540).

Respect to claim 23, Holland and Norris fail to disclose the inorganic macroporous material comprises titania in nanocrystalline anatase form. However, Holland clearly teaches the macroporous material comprises titania (see abstract in page 538). Oki teaches to use titania have a crystalline structure of anatase form (col. 2 lines 55-67). It would have been obvious to one of ordinary skill in the art at the time of the invention was made, to modify Holland and Norris in view of Oki by using crystalline structure of anatase form because this form is common for titania crystal.

10. Claims 14 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Holland et al. in view of Norris as applied to claim 9 above and further in view of Luca (US 2004/0026324 A1).

Respect to claim 14, Holland and Norris fail to disclose the surfactant comprises sodium dodecyl sulfate. However, Norris clearly teaches to use surfactant. Luca teaches to use anionic surfactant including sodium dodecyl sulfate (paragraph 0045). It would have been obvious to one having ordinary skill in the art, at the time of invention, to modify Holland and Norris by using sodium dodecyl sulfate as a surfactant because equivalent and substitution of one for the other would produce an expected result.

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Respect to claim 25, Holland and Norris fail to disclose the gravitational force is applied by centrifugation. However, Holland clearly teaches to use gravitational force (See Figure in Scheme 1). Lucas teaches to use centrifugation in order to separate the solid material (paragraph 0066, 0083). It would have been obvious to one having ordinary skill in the art, at the time of invention, to modify Holland and Norris by using centrifugation because it will help to separate the solid material.

11. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Holland et al. in view of Norris as applied to claim 9 above, and further in view of Constant et al. (US 6,339,030)

Respect to claim 29, Holland and Norris fail to disclose the specific refractive index of the macroporous material. However, Holland teaches the macroporous material is titania. Constant discloses the refractive index of titania is a result effective variables range from about 2.6 to 2.8 (col. 5 lines 5-35). The result effective variable is commonly determined by routine experiment. The process of conducting routine experiments so as to produce an expected result is obvious to one of ordinary skill in the art. Hence, it would have been obvious to one having ordinary skill in the art, at the time of invention, to perform routine experiment to obtain optimal refractive index as an expected result.

Response to Arguments

12. The examiner provides a new ground of rejections as discussed above in order to response to applicant's new claims 9-29.

Conclusion

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Binh X. Tran whose telephone number is (571) 272-1469. The examiner can normally be reached on Monday-Thursday and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

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Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Binh X. Tran

NADINE MORTON
SUPERVISORY PATENT EXAMINER
ART UNIT 1765

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